DOCUMENT RESUME

ED 239 007 UD 023 315

AUTHOR Stennett, R. G.
TITLE Resource Allocation.
INSTITUTION London Board of Education (Ontario). Educational Research Services.
PUB DATE 83
NOTE 14p.; Paper presented at the conference of the Association of Educational Research Offices of Ontario (Toronto, Ontario, June 7, 1983).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Elementary Education; Foreign Countries; *Measurement Techniques; *Needs Assessment; *Resource Allocation; *Resource Teachers; *Student Characteristics
IDENTIFIERS *Ontario (London)

ABSTRACT

A research allocation formula employed in London, Ontario elementary schools, as well as supporting data on the method, are provided in this report. Attempts to improve on the traditional methods of resource allocation in London's schools were based on two principles: (1) that need for a particular service could and should be determined empirically; and (2) that need must ultimately be defined in terms of student characteristics. A ten-step Resource Allocation Formula (RAF) based on these principles was developed and used for the allocation of Learning Resource Teachers (LRTs). (The LRTs' basic roles are to provide remedial help to students having difficulty with language and/or math, and to provide enrichment programming for gifted and talented students.) Use of RAF led to some significant shifts in the deployment of LRTs. Also the extent and pattern of need as determined by the RAF remained fairly stable over a two or three year period. This general method could be applied to the allocation of resources of various kinds, and any formula would be modified readily in terms of both the indicators of need and the weights attached to them. Materials contained in the report explain the allocation formula and how it was used to determine each school's share of LRTs in London. Also provided are data concerning the method's stability. (CMG)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED239007

RESOURCE ALLOCATION

Paper Presented at the A.E.R.O. Conference

Spring 1983

R. G. Stennett, Ph.D.

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

R.G. Stennett

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

EDUCATIONAL
RESEARCH SERVICES

R & D • program evaluation • literature reviews
in-service • consultation • statistics • curriculum development

The Board of Education for the City of London

UD023315

RESOURCE ALLOCATION

R. G. Stennett, Ph.D.
Educational Research Services
Board of Education for the City of London

In educational systems, the basic allocation of resources among schools tends to be made in terms of student population. Thus, the larger the school the more teachers, textbooks and services are allocated to it. This basic allocation is tempered in at least two ways. First, some additional services are supplied on a demand basis, e.g., within limits, the more requests a school makes for the services of a psychometrist, the more it gets. How much service the school gets then depends on the subjective assessment of school administrators and/or staff of what the 'need' is, and these definitions vary among people. Second, given the political nature of the process, allocations can be altered by a particular building administrator's capacity to make a compelling case that his school deserves special consideration.

The basic problem underlying these traditional methods of resource allocation is that they all represent relatively inadequate assessments of need. Our attempts to improve on this process are based on two basic principles: (1) that need for a particular service can and should be determined empirically and (2) that need must ultimately be defined in terms of student characteristics.

We would like to illustrate the application of these principles as it relates to the allocation of Learning Resource Teachers (LRTs) among the elementary schools of the London system.

The basic roles of the LRTs are to provide remedial help for students having difficulty with language and/or mathematics and to provide enrichment programming for gifted and talented students. With this role definition, the steps involved in developing a formula for allocating LRTs among the elementary schools were as follows:

(1) Various groups of educators were asked to suggest possible 'empirical indicators of need' for LRT service.

(2) From among those suggested, seven indicators were selected that were clearly related to remediation or enrichment needs, could be related directly or indirectly to student characteristics and for which empirical data could be readily developed.

(3) Several groups of educators (principals, LRTs, teachers) were then asked to rate the relative importance of each of the dimensions as an indicator of need for LRT service.

(4) The average weight assigned to each factor was then calculated for each group.

(5) The actual values for each of the seven factors were calculated for each school.

(6) The percentile equivalents of these values were calculated.

(7) A total value was calculated for each school by multiplying the percentile equivalent of each factor value by its corresponding weight and summing the resulting 7 products.

(8) The total values for each school were then summoned across all schools and then each school's' value was divided by this sum to determine the proportion of the LRT pool that each school should receive.

(9) Multiplying these proportions by the total number of LRTs available gives the number of LRTs each school should receive.

(10) These numbers are then adjusted in terms of a number of practical, central-administrative concerns.

RESULTS

The general results of applying this Resource Allocation Formula were that some significant shifts occurred in the deployment of LRTs. It appears that in prior years LRTs tended to be assigned more in terms of the *percent* of children in a school needing service rather than in terms of the *number* of such children....despite the fact that a small school with a high rate of problems will produce a smaller LRT caseload than a large school with a moderate rate.

We also discovered, that the extent of need as determined by the RAF remains fairly stable over a two to three year period. In addition, the pattern of need, reflected in the percentile equivalents of the seven factors, remains fairly stable.

DISCUSSION

It should be obvious that this general method could be applied to the allocation of resources of various kinds and that any formula can be readily modified both in terms of the indicators of need and weights attached to them.

It is also obvious that as computerized student data bases come into existence and become richer in content that the possibilities for using these methods with increased precision will also improve dramatically.

1983 06 07
-dhh

LEARNING RESOURCE SYSTEM: ALLOCATION FORMULA

Factors That Ought To Be Considered In Determining The Degree Of Assistance Provided Each Elementary School By The Learning Resource System	*Rank Order of Factors*	*Dollars I Would Spend On Each Factor*
NUMBER OF OVER-AGE CHILDREN... The number of children in the school who are 'over-age' for their grade placement.		
CTBS PERFORMANCE... The overall performance of pupils in the school on the grade 4 and/or grade 7 administration of the Canadian Tests of Basic Skills.		
NUMBER OF UNDERACHIEVERS... The number of students in the school who show a significant degree of under-achievement, i.e., whose achievement is well below what might be expected in terms of their ability.		
NUMBER OF SLOW LEARNERS... The number of students who have significantly less than average academic aptitude or intelligence.		
STUDENT MOBILITY... The extent to which the school population typically changes (transfers in and/or out) during the school year.		
NUMBER OF 'ENRICHMENT' STUDENTS... The number of students who are sufficiently gifted or talented to profit significantly from an enrichment program.		
SPECIAL SCHOOL CHARACTERISTICS... The school has one or more special problems or characteristics which might justify additional Learning Resource System help (e.g. a major unit, undergoing very rapid growth, sizeable non-English-speaking population, new school, etc.)		
TOTAL	--	*100*

Please use the back of this sheet for any comments you may have.

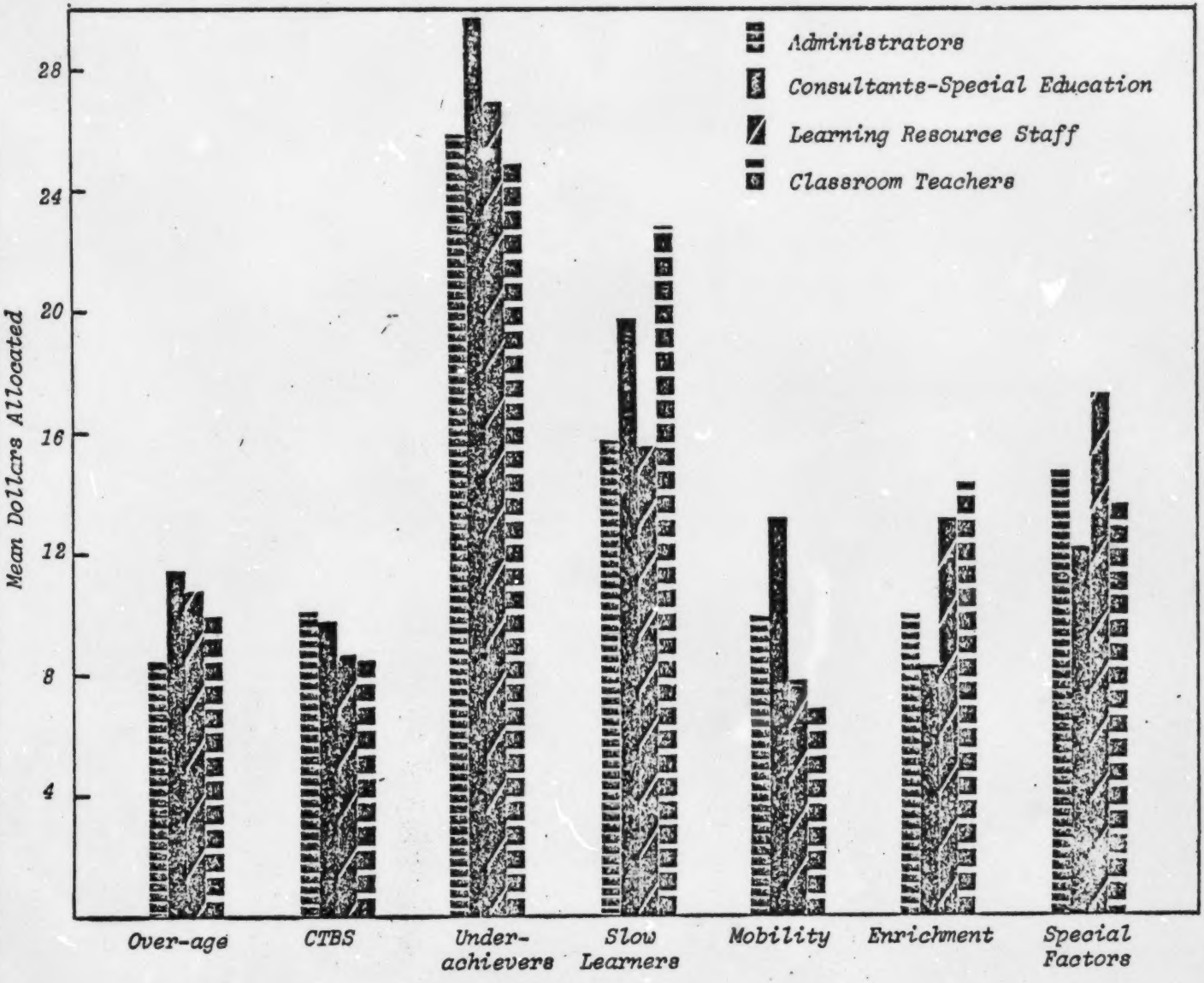


FIGURE Mean dollars allocated by four groups of respondents for the seven factors used in the Resource Allocation Formula.

APPLICATION OF THE RESOURCE ALLOCATION FORMULA TO OBTAIN
EACH SCHOOL'S FORMULA-DERIVED SHARE OF THE 42 LEARNING RESOURCE TEACHERS

School	Factors	Over-age	Low Achievement	Enrichment	Slow Learners	Under-Achievers	Mobility	Special Characteristics	Formula Value	School Profile Type
	Weights	8.40	10.06	9.94	15.75	25.85	9.87	14.56		
1	Value	30	73	104	4	17	43	1	1909.86	1(a)
	Percentile	22	3	81	3	16	11	22		
2	Value	114	394	30	150	92	160	1	6819.69	2(a)
	Percentile	93	88	22	93	89	86	22		
. . . . 58										
TOTAL (All Schools)									271208.13	

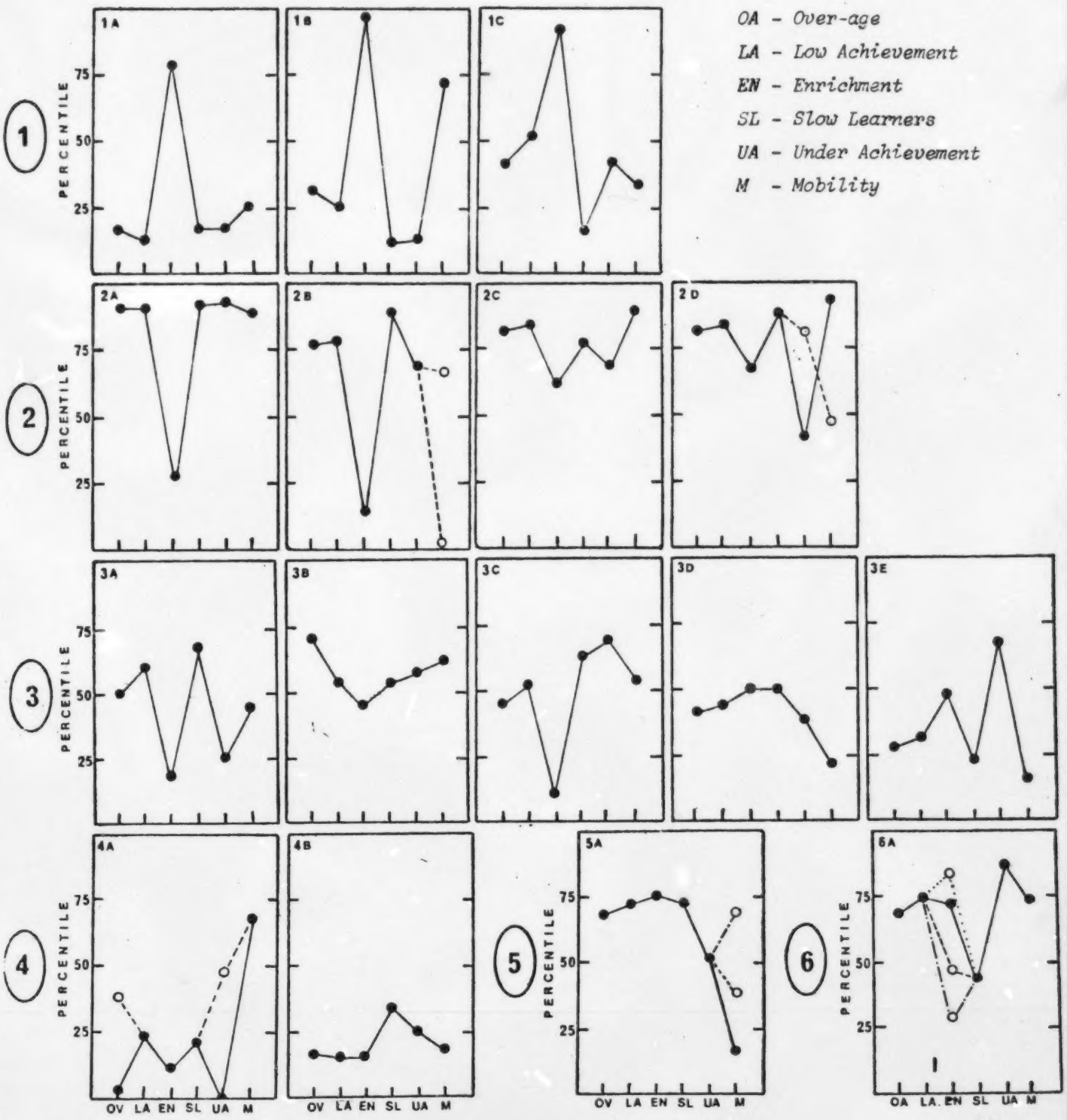
Calculations:

School 1's Share = $\frac{1909.86}{271208.13}$ x 42 = .296

School 2's Share = $\frac{6819.69}{271208.13}$ x 42 = 1.056

APPENDIX C

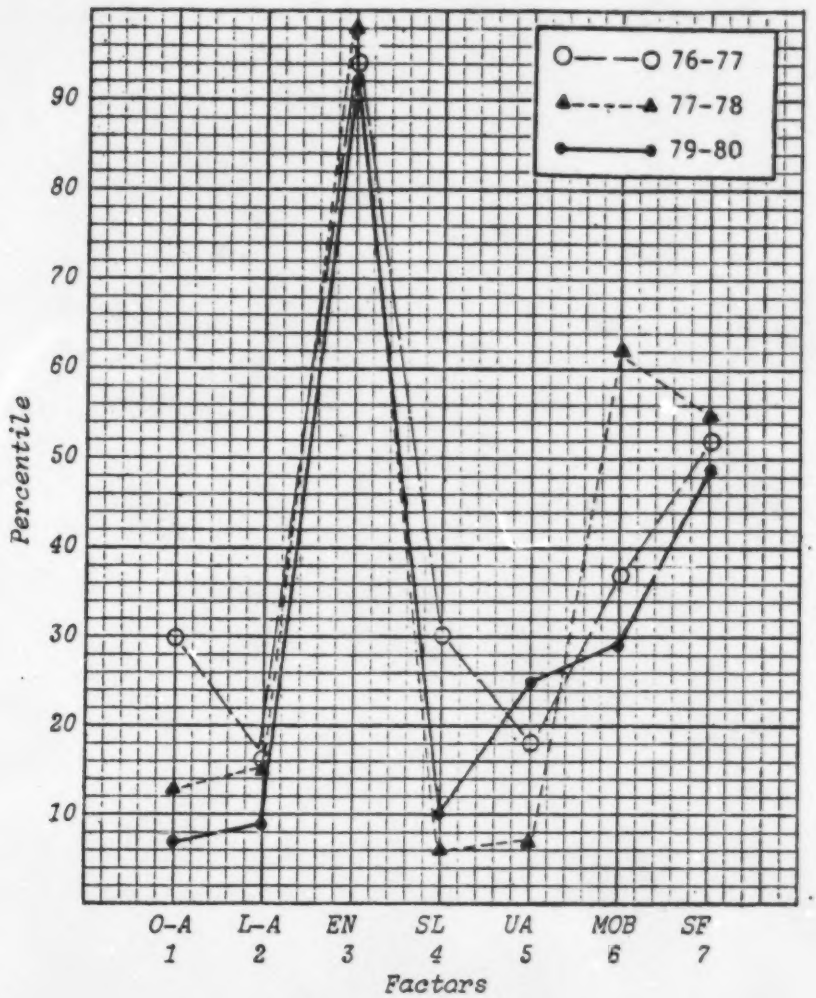
Median Profiles for Schools Grouped According to the Patterning of Their Data On Six of the Seven Factors Used in the Resource Allocation Formula (RAF).



LEARNING RESOURCE SYSTEM: RESOURCE ALLOCATION FORMULA -
SCHOOL PROFILES

447 - 76-77
474 - 77-78
409 - 79-80

Code 53 School _____ Area _____ School Population _____



								TOTAL (1-5)	
N CASES IDENTIFIED	20	85	152	17	26	78	4	300	79-80
PERCENTILE	7	9	92	10	25	29	49	354 - 76-77 368 - 77-78	

% OF SCHOOL POPULATION	5	21	37	4	6	19

1979-80 Resource Teacher Allocation ..... .66

1980-81 Tentative Allocation (Administrator's weights) .... .448

1980-81 Final Recommendation .....

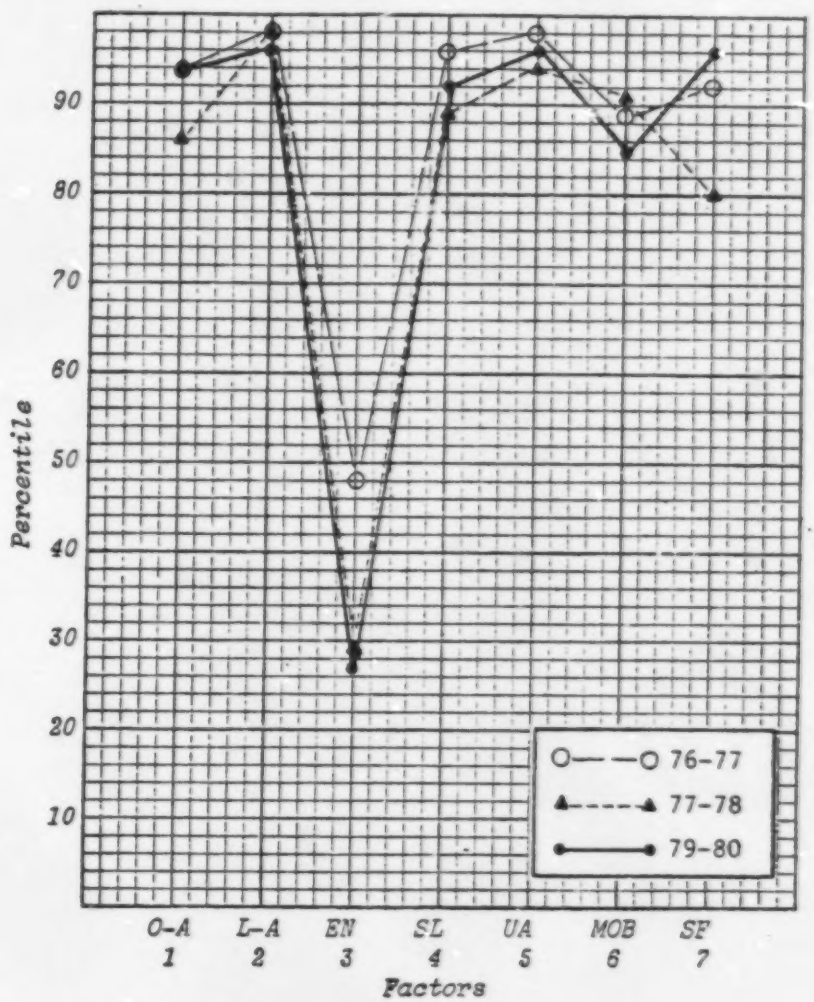
Factor Definition - See reverse for detailed definition.

1(O-A) Number over-age students
2(L-A) Number of low achievers
3(EN) Number of enrichment students
4(SL) Number of slow learners
5(UA) Number of underachievers
6(MOB) Number of new entries
7(SF) Special conditions

LEARNING RESOURCE SYSTEM: RESOURCE ALLOCATION FORMULA -
SCHOOL PROFILES

776 - 76-77
734 - 77-78
815 - 79-80

Code 22 School _____ Area ___ _ School Population



								TOTAL (1-5)	
# CASES IDENTIFIED	114	495	37	133	120	169	7	699	79-80
PERCENTILE	94	96	27	92	96	85	96	1002 - 76-77 863 - 77-78	

% OF SCHOOL POPULATION	14	61	5	16	15	21

1979-80 Resource Teacher Allocation 1.0

1980-81 Tentative Allocation (Administrator's weights) 1.190

1980-81 Final Recommendation .....

Factor Definition - See reverse for detailed definition.

1(O-A) Number over-age students
2(L-A) Number of low achievers
3(EN) Number of enrichment students
4(SL) Number of slow learners
5(UA) Number of underachievers
6(MOB) Number of new entries
7(SF) Special conditions

DEFINITIONS OF THE SEVEN FACTORS USED TO CALCULATE THE LEARNING RESOURCE SYSTEM ALLOCATION FOR EACH SCHOOL

I. Number of Overage Children: The number of children who were one or two grades behind the normal grade placement for their age, as of September 30th, 1976. *(from Mr. McTaggart's age-grade survey.)*

II. Number of Low Achievers: The number of children whose achievement score is below the mean for the system, estimated for each school from the grade 4 and/or grade 7 CTBS total average standard score data.

III. Number of Enrichment Students: The number of children whose ability score is in the top 15% for the system, estimated for each school from the grade 4 Otis Lennon and/or grade 7 D.T.L.C. data.

IV. Number of Slow Learners: The number of children whose ability score is in the bottom 15% for the system, estimated for each school from the grade 4 Otis Lennon and/or the grade 7 D.T.L.C. data.

V. Number of Underachievers: The number of children who: 1) score below the mean on a standardized achievement test; 2) have positive discrepancy scores *(M.A. standard score - achievement standard score)*; and 3) are in the 20% of cases in their IQ band who have the largest discrepancy scores. *(There were 7 IQ bands, each containing roughly 14% of the cases tested).* These data were estimated for each school from grade 4 and grade 7 CTBS total average standard scores, and grade 4 Otis Lennon and grade 7 D.T.L.C. scores.

VI. Mobility: The number of new entries into the school during the 1975-76 school year, not counting kindergarten entries, entries from junior to senior schools or any entries as a result of administrative changes.

VII. Special Conditions: The number of special factors in a school which might contribute to a learning resource teacher's job but have not been covered by the other six factors. One point was given for each of the following factors which the principal of each school identified in response to a simple survey:

- this is a new school
- this is part of a major unit
- this school is growing rapidly
- there is a large non-English speaking population
- there is a large group of children with learning disabilities
- there is a heterogeneous student population
- there is a significant number of emotionally disturbed children
- there is a significant number of low SES children
- there is a significant number of children from broken homes
- there has been a good deal of administrative shifting and bussing of children

TABLE 1 Correlation of School Population and Resource Allocation Formula (RAF) Values Across Time Periods of 1, 2 and 3 Years.

Interval	Years	Population	RAF Values
1	76-77 vs 77-78	.946	.863
2	77-78 vs 79-80	.893	.852
3	76-77 vs 79-80	.868	.820

TABLE 2 Correlations Among Resource Allocation Formula (RAF) and Early Identification (EID) Values for Various School Years.

Variable	RAF 77-78	RAF 79-80	EID 79-80	EID 80-81
RAF 76-77	.863	.820	.614	.679
RAF 77-78	--	.852	.678	.719
RAF 79-80		--	.657	.708
EID 79-80			--	.872
EID 80-81				--

TABLE 3 Correlations of School Population for Various Years With Resource Allocation Formula (RAF) and Early Identification Ratings (EID) for Various Years.

	RAF			EID	
Variable	76-77	77-78	79-80	79-80	80-81
Population 76-77	(.673)	.580	.590	.329	.510
Population 77-78	.620	(.599)	.590	.367	.516
Population 79-80	.537	.508	(.642)	(.434)	.555